ERSHLER, A.B.; TEDORADZE, G.A.; MAYRANOVSKIY, S.G.

Effect of the adsorption of organic substances on the kinetics of their electroreduction. Dokl.AN SSSR 145 no.6:1324-1327 Ag '62.
(MIRA 15:8)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.
(Organic compounds) (Adsorption) (Reduction, Electrolytic)

TEDORADZE, G.A.; ERSHLER, A.B.; MAYRANOVSKIY, S.G.

Effect of the adsorption of reducing substances on the kinetics
of electrode process. Report No.2: Electrochemical behavior of
benzyl chloride. Izv.AN SSSR.Otd.khim.nauk no.2:235-240 F '63.
(MIRA 16:4)

1. Institut elektrokhimii AN SSSR.
    (Toluene)   (Reduction, Electrolytic)

ERSHLER, A. B.; DZHAPARIDZE, D. I.; TEDORADZE, G. A.

Shape of i-t curves i⁻ the region of polarographic maxima. Zhur.
fiz. khim. 37 no. 3:666-668 Mr '63.   (MIRA 17:5)

1. Institut elektrokhimii AN SSSR.

ZOLOTOVITSKIY, Ya.M.; TEDORADZE, G.A.; ERSHLER, A.B.

Effect of large surface coverages in the electrochemical reduction
of dipyridylethylene on mercury. Elektrokhimiia 1 no.7:828-832
Jl '65.   (MIRA 18:10)

1. Institut elektrokhimii AN SSSR.

TEDORADZE, G.A.; ZOLOTOVITSKIY, Ya.M.; ERSHLER, A.B.

Adsorption effects in the electrochemical reduction of
1,2-dipyridylethylene on mercury. Elektrokhimiia 1 no.10:1280-
1287 O '65.   (MIRA 18:10)

1. Institut elektrokhimii AN SSSR.

TEDORADZE, G.A.; ERSHLER, A.B.

Effect of the high degree of surface filling in electrochemistry.
Usp.khim. 34 no.10:1866-1878 O '65.

(MIRA 18:11)

1. Institut elektrokhimii AN SSSR.

ERCHLER, A.B.; BELOKOLOS, Ye.D.; TEDORADZE, G.A.

Effect of the adsorption of organic substances on the kinetics of its electrochemical reduction at small surface coverage of the electrode. Elektrokhimiia 1 no.12:1429-1433 D '65.
(MIRA 19:1)

1. Institut elektrokhimii AN SSSR. Submitted April 28, 1965.

ERSHLER, E., inzhener.

      Conference on modern problems in concrete technology. Stroi.mat.
3 no.2:29 F '57.   (MIRA 10:3)
            (Moscow--Concrete)

ERSHLER, E. inzh.

Physical methods of testing qualities of porous building materials.
Strol. mat. 4 no.11:15-17 N '58.   (MIRA 11:12)
                    (Building materials--Testing)

KUDRYASHEV, I.T., kand.tekhn.nauk. Prinimali uchastiye: POPOV, N.A., prof.,
doktor tekhn.nauk; YEROFEYEVA, Ye.A., kand.tekhn.nauk; GORYAINOV,
K.E., doktor tekhn.nauk; VOLCHEK, I.Z., kand.tekhn.nauk; KUPRIYANOV,
V.P., kand.tekhn.nauk; YAKUB, I.A., kand.tekhn.nauk; KEVESH, P.D.,
kand.tekhn.nauk; ERSHLER, E.Ya., inzh.. KHAVIN, B.N., red.izd-va;
STEPANOVA, E.S., tekhn.red.; SOLNTSEVA, L.M., tekhn.red.

[Technical instructions for the manufacture of prefabricated elements
from cellular autoclave concrete] Teckhnicheskie usloviia na izgo-
tovlenie sbornykh izdelii iz avtoklavnykh iacheistykh betonov.
Moskva, Gos.izd-ve lit-ry po stroit., arkhit., i stroit.materialam,
1959. 79 p.   (MIRA 12:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i
zhelezobetona, Perovo. 2. Nauchno-issledovatel'skiy institut betona
i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR (for
Kudryashev). 3. Moskovskiy inzhenerno-stroitel'nyy institut imeni
V.V.Kuybysheva, (for Popov, Yerofeyev). 4. Nauchno-issledovatel'skiy
institut po stroitel'stvu Minstroya RSFSR (for Goryainov, Volchek,
Kupriyanov, Yakub). 5. Nauchno-issledovatel'skiy institut zhelezo-
betona Glavmoszhelezobetona (for Kevesh, Ershler). 6. Deystvitel'nyy
chlen Akademii stroitel'stva i arkhitektury SSSR (for Popov).
                     (Precast concrete)

ERSHLER, E.Ya., inzh.

Testing physical and technical properties of perhydrol-based
aerated concrete using electronic instruments. Trudy NIIZHB
no.8:213-218 '59.   (MIRA 13:4)

1. Vsesoyuznyy gosudarstvennyy nauchno-issledovatel'skiy
institut zhelezobetonnykh detaley i konstruktsiy.
      (Lightweight concrete--Testing) (Electronic instruments)

KEVESH, P.D., kand. tekhn. nauk; ERSHLER, E.Ya., inzh.; KUPRIYANOV, V.P.,
    kand. tekhn. nauk, nauchnyy red.; TYUTYUNIK, M.S., red. izd-va;
    BOROVNEV, N.K., tekhn. red.

    [Air-entrained concrete made from perhydrol]Gazobeton na pergidrole.
    Moskva, Gosstroiizdat, 1961. 111 p.   (MIRA 14:11)
                        (Air-entrained concrete)

ERSHLER, E.Ya., inzh.

Effect of the liberation of heat from cements on conditions of
steaming concrete. Bet. i zhel.-bet. 8 no.2:79-81 F '62.

(MIRA 16:5)

(Concrete)

BUDNIKOV, P.P.; EPSHLER, E. Ya.

Processes involved in the solidification of portland cements
when concretes are undergoing hydrothermal treatment under
atmospheric pressure. Dokl. AN SSSR 155 no. 4:916-919 Ap '64.
(MIRA 17:5)

1. Cl len-korrespondent AN SSSR (for Budnikov).

M ERSHLER, G. V.

"Mechanism of Formation of Bright Zinc Deposits on the Cathode. N. T. Kudryavtsev and G. V. Ershler (Izvled.y Akad. Nauk S.S.S.R., 1950, 73, (2), 343-344; (... Abs., 1930, 44, 7670).—[In Russian]. Bright Zn electrodeposits of any desired thickness are produced from acid $ZnSO_4 + Al_2(SO_4)_3$ baths in the presence of 2:6 or 2:7-naphthalenedisulphonic acid at room temp. and at high c.d. (3-10 amp./dm.²), with the bath agitated by compressed air. These deposits are oriented along the hexagonal axis, in contrast to the random dull deposits produced in the same bath without the organic addn. At a higher temp. a higher c.d. is necessary to give the bright deposit. The effect of the brightener is due to adsorption on growing crystal faces.

KUDLO, B.P.; SCHMIDT, T.A.

Applicability of the dynamic method of calculating the elements
of ocean currents in the Barents Sea. Trudy GOIN no.86:100-111
'65.   (MIRA 18:9)

KOROTNYAN, V. S.; ERSHON, R. A.

Efficient network systems within a collective farm taking
into account the future increase in consumers' needs. Izv.
AN Mold. SSR no.9:17-23 '62.   (MIRA 16:1)

(Moldavia—Rural electrification)

URSKAYA, L. S.

"The role of the Ornithodoros lahorensis ticks in keeping and
transmitting the tularemia microbe." p. 173.

Dissertations and Abstracts on parasitologic (obstetric) problems Biologic congress,
biology. 22-29 Oktyabrya 1959. (Trudii Congress on Parasitologic and
Pest Lice and Diseases with Internal Med 22-29 October 1959), Leningrad, Soviet,
1959, Academy of Medical Sciences USSR and Academy of Science USSR, no. 1   204pp.

Central Asiatic Antiplague Inst. /AlmaAta

ERSHTEYN, A.S.

Effect of a novacaine block on sensitization in experimental
conditions. Trudy AMN SSSR 24 no.2:176-183 '53.   (MLRA 7:7)
      (PROCAINE, effects,
       *on exper. serum anaphylaxis)
      (ALLERGY, experimental,
       *serum anaphylaxis, eff. of precaine nerve block)

ERSIL, Josef, inz.

Manufacture and development of new resistance welding machines.
Zvaranie 13 no. 1:10-17 Ja '64.

1. Zavody elektrotepelnych zarizeni, Horice.

ERSIL, Josef, inz.   (Horovice v Podkrkonosi)

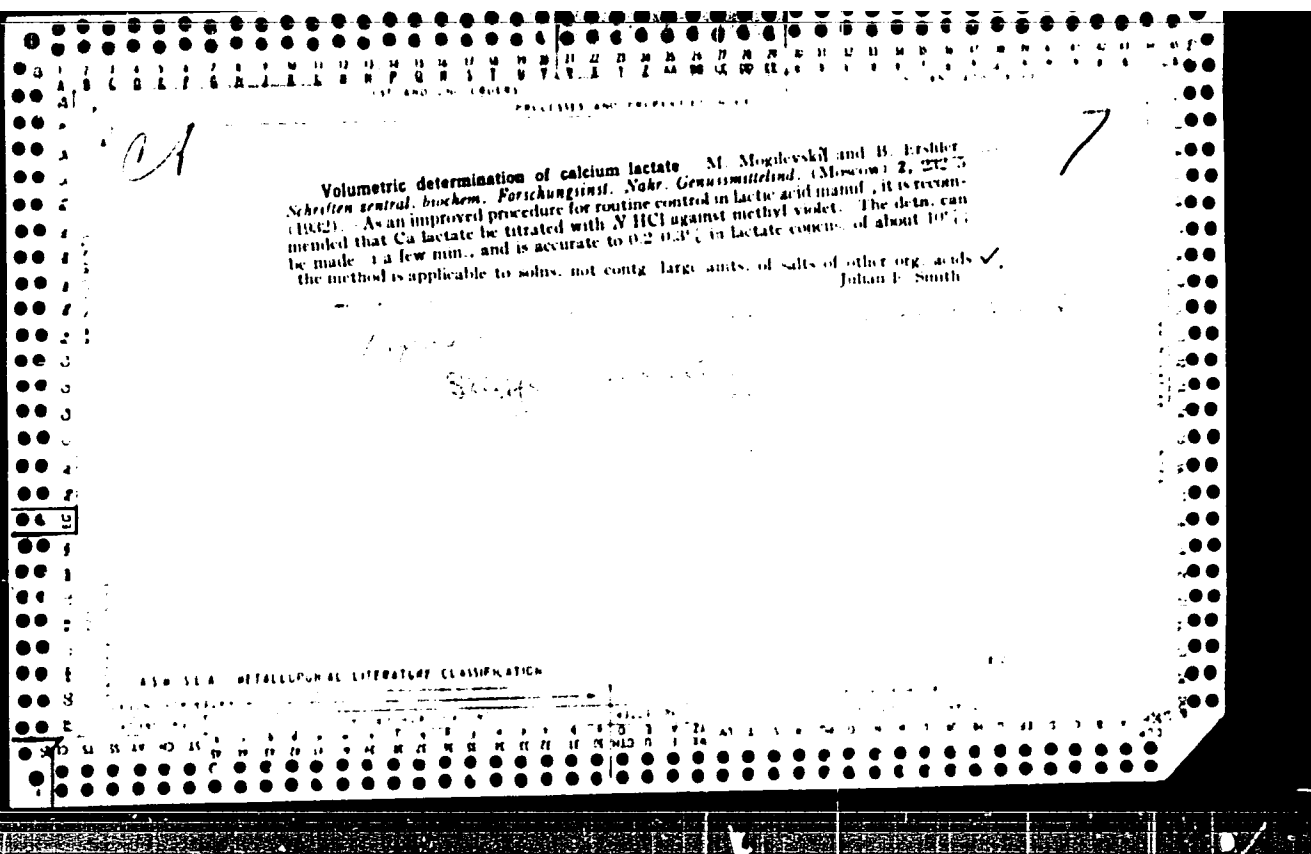   Balancing weight for working tools.   Energetika Cz 14
        no.1:52 Ja'64.

ERSLER, Gabriel

Maxwell's operation with Melanowski's modification in a
case of symblepharon with eyeball atrophy. Klin. oczna 35
no.1:115-120 '65.

1. Z Kliniki Chorob Oczu Akademii Medycznej w Warszawie
(Kierownik: prof. dr. med. S. Altenberger [deceased]).

ERSLER, V., kand.tekhn.nauk

Using the exhaust gas heat from internal combustion
engines for the operation of semiconductor thermo-
electric generators. Rech.transp. 19 no.7:27-28
Jl '60.   (MIRA 13:8)
        (Thermoelectricity) (Waste heat)

Volumetric determination of calcium lactate. M. Mogilevskii and B. Ershler. Schriften zentral. biochem. Forschungsinst. Nahr. Genussmittelind. (Moscow) 2, 272 (1932). As an improved procedure for routine control in lactic acid manuf., it is recommended that Ca lactate be titrated with N HCl against methyl violet. The detn. can be made in a few min., and is accurate to 0.2-0.3% in lactate concns. of about 10%; the method is applicable to solns. not contg. large amts. of salts of other org. acids. ✓

Julian F. Smith

PROCESSES AND PROPERTIES

Determination of the total volume of the disperse phase in gelatin soln. B. V. Ershler. *J. Phys. Chem.* (U. S. S. R.) **5**, 574–8(1934).—Results of detns. of the total vol. by the method of Polanyi differ greatly owing to adsorption and the Donnan effect. These effects can be avoided by using KIO₃ crystals where the adsorption is negligible and the Donnan effect is also small. In 1 g. of soln. 1 g. of gelatin occupies a vol. of 1.155 at 4% in M NaCl.

P. H. Rathmann

Zhur. Fiz. Khim.

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Application of ultrafiltration for the separation of colloids and crystalloids. B. Ershler. *J. Phys. Chem.* (U. S. S. R.) 5, 1388-65(1934); cf. *C. A.* 28, 7106[8].— Colloid membranes used for filtering hold back crystalloids to a very large extent. The retention of crystalloids sharply differs for electrolytes and nonelectrolytes. With nonelectrolytes retention is independent of concn. of the soln. and in general is very small (2-3%). With electrolytes, retention depends greatly on the concn. of

the soln. It is large for dil. solns. (30) 50% for 0.005 M soln.) and falls sharply with concn. (2-3% for a M soln.). Electrolytes with higher-valence ions having the same charge as the membrane are retained to a greater extent than are lower-valence ions charged oppositely to the membrane. An explanation for the above facts is given.   Eino Hanninen

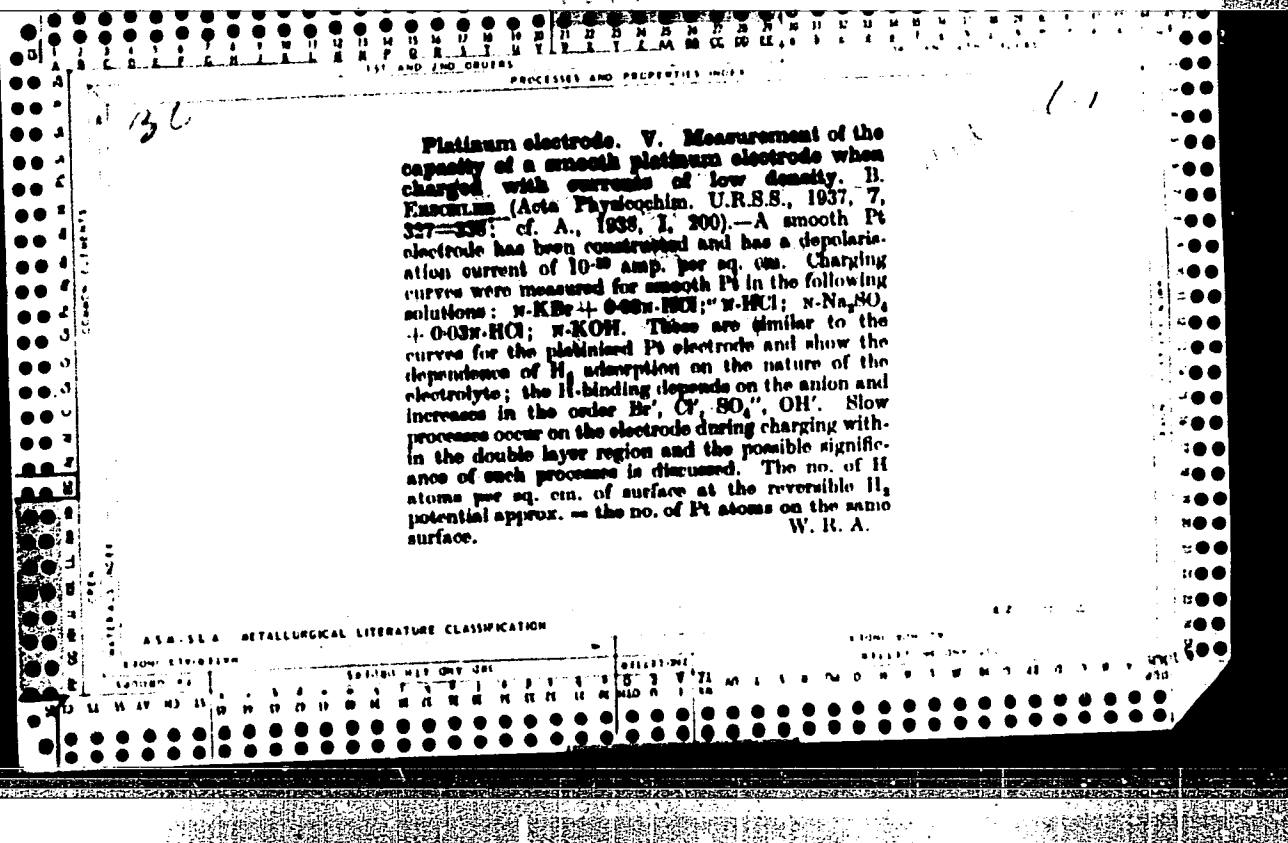A39-3L4 METALLURGICAL LITERATURE CLASSIFICATION

CA

Vest. AN SSSR.
Ser. Khim

The platinum electrode. VI. The adsorption of hydrogen and oxygen on platinum at high temperatures. N. Kobozev, O. Dobrin and A. Frumkin. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Ser. chim.* 1937, 1085-72 (in English 1073). – Pt annealed in H_2 becomes poisoned and the amt. of easily removable H_2 on its surface is reduced to 40% of the amt. adsorbed on unheated Pt. In addn. a certain amt. of the H becomes very firmly bound. A smooth Pt electrode poisoned with As loses most of its capacity to adsorb H and the oxidation of the electrode begins at a lower cathode potential. The polarization curve begins to change its form when the As adsorption is less than 4×10^{-9} g. As per sq. cm. of Pt surface. When Pt is heated up to 900° for 10 sec. a monomol. layer of O is adsorbed on its surface. Prolonged heating of Pt results in O adsorption sufficient to form several at. layers and in addn. the O is more firmly bound. Oxidation with air of electrolytically reduced Pt proceeds faster in an alk. medium than in an acid or neutral one.   John Livak

ASM-ISLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

*The Capacity of a Bright Platinum Electrode in Various Electrolytes, and its Dependence on the Treatment of the Electrode. B. Ershler and M. Prois-kurnin (*Acta Physicochimica U.R.S.S.*, 1937, 6, (2), 195-204).—[In English.] The electrical capacity of a bright platinum electrode depends largely on the purity of the electrolyte and on the previous treatment of the electrode. Heating in hydrogen produces an electrode with a small capacity for hydrogen. The difference between a bright and platinized platinum electrode is very pronounced in the oxygen region.—J. S. G. T.

A S B . S L A   METALLURGICAL LITERATURE CLASSIFICATION

Platinum electrode. V. Measurement of the capacity of a smooth platinum electrode when charged with currents of low density. B. ERSHLER (Acta Physicochim. U.R.S.S., 1937, 7, 327—338; cf. A., 1938, I, 300).—A smooth Pt electrode has been constructed and has a depolarisation current of 10^{-10} amp. per sq. cm. Charging curves were measured for smooth Pt in the following solutions: N-KBr $+$ 0.03N-HCl; N-HCl; N-Na$_2$SO$_4$ $+$ 0.03N-HCl; N-KOH. These are similar to the curves for the platinised Pt electrode and show the dependence of H$_2$ adsorption on the nature of the electrolyte; the H-binding depends on the anion and increases in the order Br$'$, Cl$'$, SO$_4''$, OH$'$. Slow processes occur on the electrode during charging within the double layer region and the possible significance of each process is discussed. The no. of H atoms per sq. cm. of surface at the reversible H$_2$ potential approx. = the no. of Pt atoms on the same surface.

W. R. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Ca

2

The polarization capacity of a smooth gold electrode. O. ... Acta Physicochim. U.R.S.S. ... data on the poten... of O_2 ... and the charging curve ... KOH soln. of a gold surface ... oxidation the charging curves are distorted. The O bound on the Au surface can be removed by cathodic polarization ... potential ... less than in acids. ... An action leads to a semi... O_2 ... potential arrest at 0.45- ... layer of H. The capacity ... F. per sq. cm. of apparent sur... The potential of the oxidized Au electrode is 0.75 to 0.98 v.

V. H. Rathmann

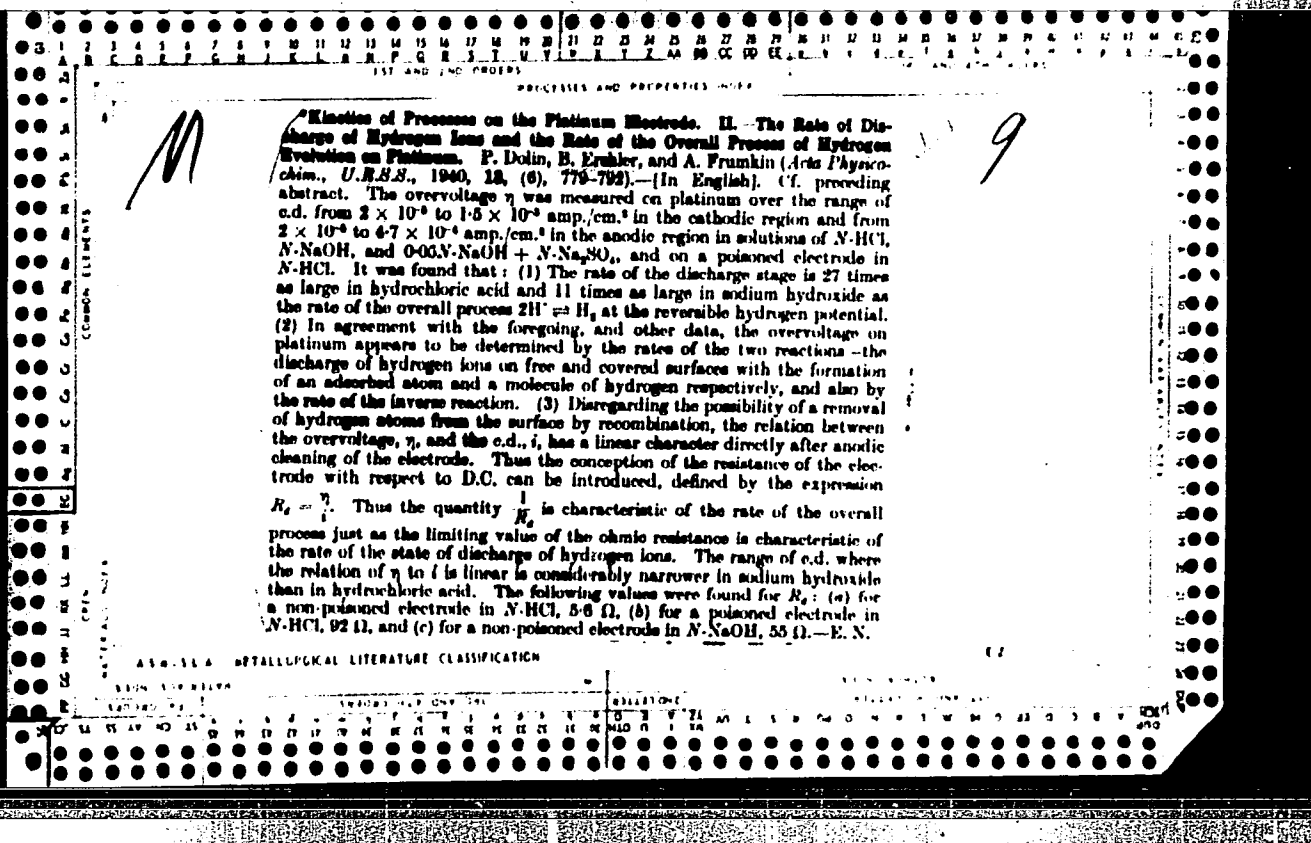Lab Surface Phenomena, Physics. Chem Inst.
im L. Ya. Karpov

Kinetics of Processes on the Platinum Electrode. II. The Rate of Discharge of Hydrogen Ions and the Rate of the Overall Process of Hydrogen Evolution on Platinum. P. Dolin, B. Ershler, and A. Frumkin (Acta Physicochim., U.R.S.S., 1940, 13, (6), 779-792).—[In English]. Cf. preceding abstract. The overvoltage η was measured on platinum over the range of c.d. from 2×10^{-9} to $1 \cdot 5 \times 10^{-3}$ amp./cm.^{2} in the cathodic region and from 2×10^{-9} to $4 \cdot 7 \times 10^{-4}$ amp./cm.^{2} in the anodic region in solutions of N-HCl, N-NaOH, and $0 \cdot 05 N$-NaOH + N-Na$_2$SO$_4$, and on a poisoned electrode in N-HCl. It was found that : (1) The rate of the discharge stage is 27 times as large in hydrochloric acid and 11 times as large in sodium hydroxide as the rate of the overall process $2H^+ \rightleftarrows H_2$ at the reversible hydrogen potential. (2) In agreement with the foregoing, and other data, the overvoltage on platinum appears to be determined by the rates of the two reactions —the discharge of hydrogen ions on free and covered surfaces with the formation of an adsorbed atom and a molecule of hydrogen respectively, and also by the rate of the inverse reaction. (3) Disregarding the possibility of a removal of hydrogen atoms from the surface by recombination, the relation between the overvoltage, η, and the c.d., i, has a linear character directly after anodic cleaning of the electrode. Thus the conception of the resistance of the electrode with respect to D.C. can be introduced, defined by the expression $R_i = \frac{\eta}{i}$. Thus the quantity $\frac{1}{R_i}$ is characteristic of the rate of the overall process just as the limiting value of the ohmic resistance is characteristic of the rate of the state of discharge of hydrogen ions. The range of c.d. where the relation of η to i is linear is considerably narrower in sodium hydroxide than in hydrochloric acid. The following values were found for R_i : (a) for a non-poisoned electrode in N-HCl, $5 \cdot 6 \, \Omega$, (b) for a poisoned electrode in N-HCl, 92 Ω, and (c) for a non-poisoned electrode in N-NaOH, 55 Ω.—E. N.

Passivity of platinum. I. B. V. Ershler. J. Phys. Chem. (U.S.S.R.) 16, 587–67 (1969)— A Pt electrode was polarized in 0.5 N HCl by a.c. of 50 cycles per sec., and a cathodic oscillograph arranged so as to show the potential of the electrode as a function of the electricity supplied to it, beginning with a cathodic or anodic half-period. The curves of potential against coulombs supplied are similar to higher voltages when the electrode is also anodically polarized by a d. c.; this shift is greater at small charges than at high charges, and the potential V becomes independent of the a. c. when the d. c. is large enough. When the d. c. is small it is used up for soln. of Pt as Pt⁺⁺; at a higher d. c. Cl is liberated and transforms the Pt into a Cl electrode, which has a high capacity and is less affected by a. c. When the effect of the a. c. is reduced Pt becomes passive. Assuming the capacity of the double layer to be independent of V, the rate of soln. of Pt by the a. c. can be calcd.; it appears to be independent of V between 1 and 1.2 v. (against normal H electrode). This is probably due to a blocking of the Pt surface by O at higher V. The thickness of O covering observed was only 0.05 of a unimol. layer; therefore the rate of soln. must increase very rapidly with the area of free Pt surface. — B. C. P. A.

PAT CLINES AND PROPERTIES INDEX

Mechanism of the action of the nickel oxide electrode. I. V. Krishler, O. S. Tyurikov and A. D. Smirnova. *J. Phys. Chem.* (U.S.S.R.) 14, 1865 8(1940). It is usually assumed that charging of the Ni(OH)$_2$ electrode involves liberation of H$_2$O, and discharging consumes H$_2$O, from the electrolyte. To check this assumption a Ni(OH)$_2$ electrode was charged in KOH; the decrease of KOH concn. corresponded with 1.1–2.0 mols. of H$_2$O per faraday in 4.2 N and 2.3–3.6 mols. of H$_2$O in 1.5 N. On a subsequent discharge an apparent consumption of 1.4–2.6 and 2.8–3.8 mols. H$_2$O, resp., per faraday took place. These effects were, however, only apparent since the concn. of K$_2$CO$_3$ or KCl added to KOH remained almost const during charge and discharge. KOH concn. changes because of a sorption or desorption of KOH by Ni(OH)$_2$.

R. C. P. A

DOLIN, S.; ERSHLER, B.; FRUMKIN, A.

Moscow

Laboratory of Surface Phenomena, Physico-Chemical Institute imeni L. Ya. Karpov, (1940-).

"The effect of the Diffusion of Molecular Hydrogen on the Polarization Capacity of the Pt. Electrode" Part III.

Zhur. Fiz. Khim., Vol. 14, No. 7, 1940.

MQ.

Electrochemical Mechanism of Passivation of Platinum. B. V. Ershler (*Compt. rend. (Doklady) Acad. Sci. U.R.S.S.*, 1942, 37, (7-8), 230-232) [In English.] See preceding abstract. It is suggested that the rôle of adsorbed oxygen in the passivation of platinum is to decrease the potential drop across the electrical double layer at the metal surface. This causes a proportionate decrease in the rate of solution. The electric field of the double layer is weakened, leading to an increase in the activation energy for the reaction of chlorine ions with platinum.—G. V. R.

19-3

On the Passivity of Platinum. B. Kabaker (Acta Physicochim., U.R.S.S., 1944, 19, (2,3), 139-147).—(In English.) Using a cell formed of three communicating vessels, the central one of which contained a platinized platinum wire while the two side vessels contained hydrogen electrodes, the amounts of electricity required respectively for oxidation of the surface and dissolution of metal were determined. This enabled correlation of the amount of adsorbed oxygen with the rate of dissolution at a constant potential to be made, an exponential relation being found. This is not in accord with the simple theory of passivation by formation of a protective oxide film. The mechanism of dissolution was also studied in 15N-H₂SO₄ solutions containing varying amounts of HCl, and the rate of dissolution was found to be proportional to the surface concentration of Cl'. These results are discussed, and it is concluded that the slowest stage in dissolution is the discharge or formation of a univalent ion. This process is inhibited by the presence of oxygen.—G. V. R.

A.S.B.-S.L.A METALLURGICAL LITERATURE CLASSIFICATION

ERSHLER, B. V.

USSR/Electrodes
    Nickel

Jun 1946

"The Mechanism of the Action of Nickel Oxide Electrodes," E. M. Kuchinskiy and B. V. Ershler, 8 pp

"Zhur Fiz Khim" Vol XX, No 6

Describes experiments carried out on a particle of $Ni(OH)_2$ of .2 mm diameter weighing $3.10-5$ grams. Diagrams of apparatus and graphs of results. It is stated that the action has practical application in the field of chemical sources of current, electrolytic rectifiers and crysral detectors.

PA 18T89

Lab. Superficial Phenomena, Karpov Phys.-Chem. Inst.

ERSHLER, B.

"The Kinetics of Deuterium Ions Discharge and Ionization of Adsorbed Deuterium Atoms on a Pt-Electrode."

Dok. AN, 21, No 2, 1946.

PROCESSES AND PROPERTIES INDEX

Investigation of electrode reactions by the method of charging curves and with the aid of alternating currents. B. V. Ershler (Karpov Phys.-Chem. Inst., Moscow). *Discussions Faraday Soc.* No. 1, 269-77(1947); cf. C.A. 42, 7642. —Charging curves obtained at high c.ds. permit the investigation of the kinetics of electrode reactions. The curves show the dependence of the potential on the amt. of electricity passed. The formation of an adsorbed layer of O on Pt proceeds much more slowly than the formation of an adsorbed layer of H. The adsorption of O is retarded in the presence of Cl ions. The difference in the behavior of Au when charged with low and high c.ds. is accounted for. In the case of strong adsorption of O on Pt, Ag, and Au a change of adsorption properties of the metal surface is observed, which is preserved after the removal of firmly bound O. The strength of the bond between adsorbed O and metals increases with time and with the temp. of oxidation. A.-c. measurements of the capacity and conductance of an electrode in equil. with a soln. at different frequencies permit the investigation of the kinetics of different electrode reactions. By means of such measurements it is shown that the dissolution of Hg as well as the adsorption of Cl ions on its surface proceeds with a high velocity. The reasons for the difference in the *rate of adsorption of anions on Hg and Pt* are discussed. Data concerning the *influence of adsorbed O on the rate of anodic dissolution of Pt* are given.   M. F. Quaely

Study of the kinetics of electrode reactions by means of alternating currents. I. Theory of the polarization of reversible electrodes by weak alternating currents. B. V. Ershler (Karpov Inst. Phys. Chem., Moscow). J. Phys. Chem. (U.S.S.R.) 22, 683-95(1948).—Polarization by a.c. is a convenient method of studying rapid electrode processes because concn. polarization is reduced by using high frequencies. The relation between polarization and the rate of the electrode process is derived for the exchange of ions between metal (or metal amalgam) and soln.; for oxidation-reduction processes; and for adsorption. J. J. Bikerman

M

*Determination of the Zero Points of Solid Metals from Measurements of the Capacity of the Double Layer. I.—Lead. T. Ikriauva, B. Kabler, and A. Frumkin (Zhur. Fiz. Khim., 1944, 68, 925-936 ; C. Abs., 1949, 66, 4701.—[In Russian]. The double-layer capacity C of a smooth Pb electrode was measured with an A.C., the amplitude of which was 20 mV., the electrode being cathodically polarised with a D.C. the voltage of which was varied within 1 V. When the e.m.f. of the cell Hg|Hg$_2$Cl$_2$|N-KCl|soln.X|Pb was 0·97 V., the C passed through a min. whatever the compn. of the soln. X. The min. value of C was ~18 microfarads/cm.^{2} when X was N-KCl, ~12-13 in 0·01N-KCl, 6 in 0·0001N-KCl, 15 in N-H$_2$SO$_4$, 10 in 0·001N-H$_2$SO$_4$, and 6 in 0·0005N-H$_2$SO$_4$. When the frequency of the A.C. increases (up to 500 c./s.), the min. C decreases by a few %. When the e.m.f. is lowered from 0·97 V., C increases more steeply than when the e.m.f. is raised. In contrast to Hg, there is no range of potential-independent C at high cathodic polarisations ; this shows that the double layer on Pb is different from that on Hg. The potential of the min. C is that of the zero charge. It differs from the potential of the electrocapillary max. of Hg by 0·46 V. This difference is almost equal to the contact potential Hg/Pb and to the difference between the electrocapillary max. of Hg and liq. Pb.

2

ERSHLER, B.

Discussion

Pleskov, V. and Ershler, B., On the question concerning the calculation of separate electrode potentials from spectroscopic and thermodynamic data.

The Karpov
Physico-Chemical Institute
Moscow
April 29, 1948

SO: Journal of Physical Chemistry (USSR) 23, No. 1   (1949)

Determination of the zero voltage points of solid metals from measurements of the capacity of the double layer II. Thallium, cadmium, lead. T. I. Borisova and B. N. Ershler (Karpov Inst. Phys. Chem., Moscow). *Zhur. Fis. Khim.* 24, 337–44(1950); cf. *C.A.* 43. 1701. The curves "electrode capacity C against applied voltage φ" have min. at -0.46 v. for Pb in 0.01 N KCl, -0.62 for Tl in 0.001-0.1 N KCl, and -0.70 for Cd in 0.005 N KCl, all potentials being referred to the max. of the electrocapillary curve of Hg. In agreement with Frumkin's theory (*C.A.* 40. 2055') these potentials are almost identical with the contact potentials Pb-Hg, Tl-Hg, and Cd-Hg, resp. The shapes of the C-φ curves were different for plate and for droplike solid electrodes can app. for making such electrodes is described). In the latter instance the curves were similar to those for Hg drops, and the min. C was about 25 for Pb and about 15 microfarads-sq. cm. for Cd. Similar curves were obtained for plate Cd electrodes heated in H. On the contrary, freshly scraped electrode plates gave C which showed no region of const. values greatly depended on the KCl concn. (e.g., min. C for Cd was 33 in N KCl and 24 in 0.005 N KCl, and decreased when the frequency of the charging current increased (e.g., min. C for Tl in N KCl was 19 at 200 cycles/sec. and 29 at 2000 cycles/sec.). The difference between the two types of the C-φ curves is due to non-uniform distribution of current over the rough plate electrodes.   J. J. Bikerman

ERSHLER, B. V.

Nuclear Sci. abstracts
Vol. 8, No. 4
28 Feb 54

LC

190T10

USSR/Chemistry - Development of Oxygen at   May 51
                 Platinum Electrodes

"Adsorption of Oxygen on Platinum at Polarizations Determined According to Charging Curves," Ts. I. Zalkind, B. V. Ershler, Phys Chem Inst Imeni L. Ya. Karpov

"Zhur Fiz Khim" Vol XXV, No 5, pp 565-576

Curves of charging Pt with direct current in acidified or alkalinized Na_2SO_4 solns were taken during periods from hundredths of a sec to several sec. Effect of the potential on the rate of discharge of H^+ ions was shown experimentally; results agreeing

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LC   190T10

USSR/Chemistry - Development of Oxygen at   May 51
                 Platinum Electrodes (Contd)

with prior ac expts. The 1st, slow stage in formation of surface Pt oxides is discharge of O⁻. Due to changes during the 1st stage of existence of the oxide, it exhibits properties resembling those of a phase oxide. Inhibition of discharge of oxygen by the oxide is reduced as the oxide ages. Electrochem adsorption of oxygen on platinum is facilitated by presence of adsorbed hydrogen.

LC   190T10

ERSHLER, B.V.

The problem of absolute potential in electrochemistry and the zero points of the metals. Uspekhi Khim. 21, 237-49 '52.   (MLRA 5:2)
(CA 48 no.2:471 '54)

ERshler, B V

"Application of Polarization by Alternating Current to the Investigation of the Discharge of Metal Ions. B. V. Ershler and K. I. Rozental' (Trudy Soveshchaniya po elektrokhimii 1950, 1953, 446-450).—(In Russian). The active resistance of an electrode of Zn amalgam in a soln. of a Zn salt in a supporting electrolyte, as measured by an A.C. bridge, consists of a term inversely proportional to the square root of the frequency (ω) and another term (R_{max}) independent of ω; these terms are connected with concentration and chem. polarization, resp. From measurements of R_{max} the exchange current was calculated and was found to be proportional to the concentration of Zn^{++} ions and to vary exponentially with the electrode potential, indicating that the slowest part of the exchange is the discharge of Zn^{++} ions, which takes place with simultaneous transfer of two electrons. The rate of exchange also depends on the nature of the anion, whose accelerating action increases in the order $SO_4^{2-} <$ $Cl^- < NO_2^-$.—O. V. E. T.

EL (1)

ERSHLER, B.V.

Electrochemical Properties of Cadmium in Alkaline Solutions. S. A. Rozentsveig, B. V. Ershler, F. L. Shtrum, and M. M. Ostanina. (Trudy Soveshchaniya po Elektrokhim", 1950, 1953, 571-578).—[In Russian]. The solubility of Cd oxides in alkalies increases with an increase in alkali concentration. In both the anodic oxidation of Cd to $Cd(OH)_2$ and the cathodic reduction of the hydroxide to the metal, a Cd-contg. anion is formed as an intermediate. The change in the capacity of the double layer and the resistance of the Cd electrode during anodic polarization were measured. The rates of change increased with decreasing alkali concentration and increasing anodic c.d. An oxide coating several layers thick is formed on the Cd. The anodic efficiency decreases on dilution of the alkali, and is inversely proportional to (c.d.)², but the efficiency of the cathode process is almost independent of both concentration and c.d. Only a small part of the vol. of the anodic oxide layer on the Cd participates in the formation of the passive layer.—G. V. E. T.

ERSHLER, B. V.

USSR/ Chemistry - Physical Chemistry

Card 1/1

Author   : Ershler, B. V.

Title   : Discussion on the "absolute" scale of potentials (Discussion)

Periodical   : Zhur. Fiz. Khim., 28, Ed. 5, 957 - 960, May 1954

Abstract   : The report by E. A. Kanevskiy, published in the Journal of Physical Chem-
                istry No. 27, 1953, and dealing in the subject of absolute scale of elec-
                trode potentials is discussed and certain inconsistencies are pointed out.
                Most criticism pertains to the method of calculating the values called by
                Kanevskiy the absolute potentials. Thirteen USSR references.

Institution   : ...

Submitted   : July 18, 1953

ERSHLER, B. V.

4050   AEC-tr-2435((Pt. 1) (p.251-4))
RESULTS OF THE INFLUENCE OF IRRADIATION ON THE
DIFFUSION OF SILVER IN LITHIUM. V. K. Zavoisky
[Zavoiskii] and B. V. Ershler. p.251-4 of CONFERENCE OF
THE ACADEMY OF SCIENCES OF THE USSR ON THE
PEACEFUL USES OF ATOMIC ENERGY, JULY 1-5, 1955.
SESSION OF THE DIVISION OF PHYSICAL AND MATHE-
MATICAL SCIENCES. (Translation). 4p.
    This paper was originally abstracted from the Russian
and appeared in Nuclear Science Abstracts as NSA 9-7797.

ERSHOV, G. V., KOKOVADE, V. K.   VOL IN. L. L., and ANANIN, ... I.

"Determination of the Absorption Cross-Section and of the Radiation
Capture Cross-Sec ion of Uranium - 233 for Pile Neutrons," a paper
presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

Ershler, B.V.

ALIKHANOV,A.I.; ZAVOYSKIY,V.K.; SERDYUK,R.L.; ERSHLER,B.V.; SUVOROV,L.Ya.

[Boiling homogeneous nuclear power reactor] Kipiashchii energeticheskii gomogennyi iadernyi kotel; doklady, predstavlennye SSSR na Meshdunarodnuiu konferentsiiu po mirnomu ispol'zovaniiu atomnoi energii. Moskva, 1955. 13 p. [Microfilm]   (MIRA 9:3)
                        (Nuclear reactors)

Also presented at Atoms-for-Peace Conf (UN),
Geneva Switzerland, 1955

ARSHUT, B. V., JELIN, F. I.

"Radiolysis of water in the Presence of H_2 and O_2 Due to Reactor Radiation, Fission Fragments and X-Radiation," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

Yields of neodymium and cerium isotopes from the fission of uranium-233. O. M. Kukavadze, M. P. Anikina, L. L. Goldin, and B. V. Ershler. Xiang-Yo Akad. Nauk S.S.S.R. po Mirnomu Ispol'zovaniyu Atomnoi Energii, July 1-5, 1955, Zasedaniya Otdel. Khim. Nauk (Moscow), 205-9 (English summary).—The fission yields of various isotopes of Ce and Nd were detd. mass spectroscopically by the isotope-diln. method. The yields are as follows: Ce^{140}, 5.6 ± 0.17%; Ce^{144}, 6.6 ± 0.17%; Nd^{143}, 5.16 ± 0.3%; Nd^{144}, 3.37 ± 0.3%; Nd^{145}, 3.00 ± 0.2%; Nd^{146}, 2.24 ± 0.16%; Nd^{148}, 1.15 ± 0.10%; and Nd^{150}, 0.51 ± 0.04%. The yield ratios of the Nd isotopes are detd. with an accuracy of 3-8% and that of the Ce isotopes with an accuracy of 1%. The U^{233} fission yields curve in this heavy mass region (140-150) is similar to that for U^{235}, but displaced by one mass unit in the direction of the light masses.   J. R. Leech

The influence of irradiation [with neutrons] upon the diffusion of silver in lithium. V. K. Zavoiskii and B. V. Ershler. Sessiya Akad. Nauk. S.S.S.R. po Mirnomu Ispol'zovaniyu Atomnoi Energii, Zasedaniya Otdel. Fiz.-Mat. Nauk 1955, 302-8.—The diffusion of Ag from an Ag foil of 12 μ was observed through Li of 0.5-mm. thickness, at 16, 100, and 150°, over a period of 34.2 hrs., at simultaneous irradiation with slow neutrons. There are changes observed in the rate of diffusion, because Li "disappears", i.e. two reactions take place: $Li^6 + n^1 \rightarrow He^4 + H^3$; $Li^7 + n^1 \rightarrow Li^8 \rightarrow 2 He^4 + \beta$. Thus, the diffusion coeff. $D \times 10^{13}$ was 0.10 at 16° and 0.34 sq. cm./sec. at 100°, which agrees nicely with the values calculated from the formula by Langmuir-Lashman (0.09 and 0.31, resp.).   W. J.

SUBJECT   USSR / PHYSICS   CARD 1 / 2   PA - 1515
AUTHOR   LAPTEV,F.S., ERSLER,B.V.
TITLE   The Atomization of Metals by Fission Fragments.
PERIODICAL   Atomnaja Energija, 1, fasc. 4, 63-66 (1956)
             Issued: 19.10.1956

By measuring the number of atoms evaporated on the occasion of the emission of
a fission fragment from a metal surface by the same surface valuable data con-
cerning the heated zone along the traces of the fission fragments are obtained.

The present work determines these numbers for U^{233} and Pu^{239}.
Experimental part: In an aluminium can a 2 x 3 mm plate of the metal under in-
vestigation, and above it a metal screen was mounted. The aluminium can was en-
closed in a quartz ampule with a vacuum of about 10^{-4} mm Torr. When it was
irradiated with neutrons, part of the fission fragments formed in the plate
left the metal and on this occasion they atomized a certain part of the metal.

The evaporated U^{233}- or Pu^{239}-atoms were partly deposited on the screen and their
number could be determined by measuring the α-activity of the screen. From the
number of fragments emitted from the metal surface in the course of irradiation
and from the total number of evaporated atoms the number of atoms evaporated by
one fragment was determined. Tests were carried out with metals with oxidized and
non-oxidized surfaces. The average number of atoms carried away by one

U^{233} fragment is 24 in the case of oxidized surfaces, but in the case on non-
oxidized surfaces it is 1200. In the case of Pu^{239} with a purified surface an

Atomnaja Energija, 1, fasc. 4, 63-66 (1956) CARD 2 / 2   PA - 1515

average of 3500 atoms is carried away by one fragment. The evaporation observed on the occasion of these tests is apparently not due to the macroscopic heating of the entire metal sample resulting from fission reactions Furthermore, the evaporation of plutonium caused by the emission of α-particles from a plutonium plate was investigated The number of atoms knocked out per α-particle was computed from the α-activity of the screen and from the computed quantity of α-particles emitted from the metal surface during the test. It amounts to 0.02.
Discussion of results: The data found on this occasion, which are of a certain interest, are suited for the estimation of some parameters of the heated zones in the metals, particularly of the diameter of that zone in which the temperature, after emission of the fragment, is increased up to a value that warrants evaporation. For the number of uranium atoms in the heated zone (its length amounts to $14,6.10^{-4}$ cm) the value $5,6.10^{6}$ is found. The difference in results found on the occasion of the evaporation of uranium and of plutonium is apparently due to the low degree of thermal evaporation of Pu and to its low melting temperature. Also other metals should be examined.
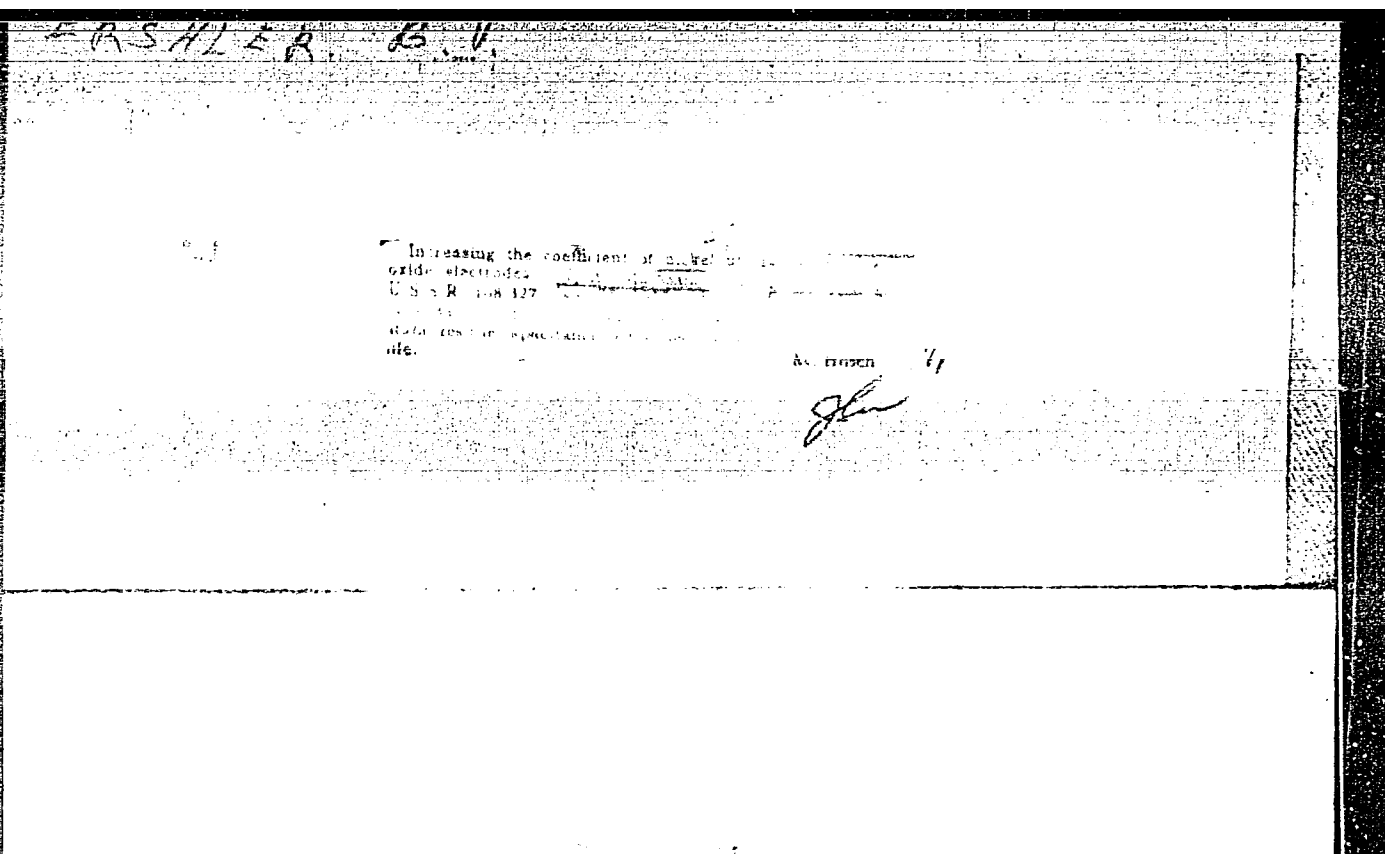

INSTITUTION:

ALIKHANOV, A.I., ERSHLER, B.V., LYUBIMOV, V.A., YELISEYEV, G.P.,

(Acad. Sci. USSR)

"Measurement of Longitudinal Polarization of p Electrons."

paper submitted at the A-U Conf. on Nuclear Reactions in Medium and Low
Energy Physics, Moscow, 19-27 Nov 57.

FASHLER G.V.

Increasing the coefficient of useful ... oxide electrodes.
U.S.S.R. 108 327 ...

... test in specimen ...
file.

As chosen

ERSHLER. B.V

ABSTRACT: These measurements were carried out on a reactor with heavy
             water. In the reactor considerably diluted solutions of the
             nitrates of the substances investigated were irradiated.
             While the cross sections were being measured, the solutions
             arranged side by side which contained thorium and the
             gauging material were simultaneously irradiated. Also
             measuring of cadmium relations is discussed in short. The
             β-activity was measured by means of a counter with a mica
             window. The values measured for activity were extrapolated
             for the point of time at which irradiation ended.
             Results: The cadmium relations measured for thorium, gold,
             uranium, and indium in various channels of the reactor are
             shown together in a table. The cross sections of thorium were
             compared with the cross sections of gold, indium, and
             uranium. The relations obtained immediately from the ex-
             periment have no simply physical significance, but it is

Card 1/3

ERSHLER. B.V

PA - 2050

Measuring of the Cross Section of Th^{232} for Thermal
Neutrons and of the Resonance Integral of the Absorption
on Neutrons (Russian)

possible, from them, to determine the cross section of
thorium for thermal neutrons as well as the amount of the
resonance integral of absorption. Next, the notion of the
average cross section is introduced, which depends on the
spectrum of the neutrons and also on the gauging material.
The average cross sections of thorium are given in a table.
From the data hitherto discussed it is then possible to
compute the cross section of thorium for thermal neutrons;
the values found are shown in form of a table. The cross
sections found with gold agree excellently with one another.
The cross sections measured with indium are noticeably
smaller than those measured with gold. Whereas the cross
sections of thorium, which were measured with uranium as
a gauging material, differ most among one another, measure-
ments on the occasion of which gold was used for gauging
gave the best results. The resonance integral of the ab-
sorption for thorium was computed according to the

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PA - 2050

Measuring of the Cross Section of Th^{232} for Thermal
Neutrons and of the Resonance Integral of the Absorption
on Neutrons (Russian)

formula $RI(Th)= RI(Au)(\sigma_{therm.Th}/\sigma_{therm.Au})((R_{Au}-1)/(R_{Th}-1))$

For the resonance integral of thorium the following values
were found: in the lattice: (88 + 5) barn, in the cavity
(63 + 2) barn, in the reflector (59 + 6) barn. These diffe-
rences may be explained by the different shape of the
spectrum of the resonance neutrons.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

Card 3/3

ERShloR,B.V

AUTHOR: ANIKINA,M.P., ERSHLER,B.V. PA - 2310

TITLE: The Yield of Sr^{90} on the Occasion of the Fission of U^{233}.
(Vykhod Sr^{90} pri delenii U^{233}, Russian).

PERIODICAL: Atomnaia Energiia, 1957, Vol 2, Nr 3, pp 275 - 276 (U.S.S.R.)
Received: 4 / 1957   Reviewed: 5 / 1957

ABSTRACT: The yields of fragments on the occasion of the fission of U^{233}
are not yet explored with sufficient thoroughness, and in parti-
cular no data are available in published works concerning the
yield of Sr^{90}. From the accumulation of Sr^{90} it is easily possible
to estimate the number of fissions occuring in a U^{233} sample on
the occasion of a long irradiation of this sample (i.e. under such
conditions in which it is difficult to utilize relatively short-
lived fragments as e.g. Ba^{140} (12 days) or Sr^{89} (53 days)).

For the determination of the yield of Sr^{90} a long irradiated U^{233}-
sample was used, which has already been described in one of the
author's previous works. With a weight of the uranium sample of
60,75 mg, 11,9 mg were fissioned therein. The activity of the
Sr^{90} in these samples determined after a three year's exposure of the
the sample, and that of the Y^{90} (which the authors separated from
the individual portions of the Sr^{90}) was determined after an ex-
posure of from 20 - 30 days (i.e. after the equilibrium Sr^{90}
(19,9 years) $\rightarrow$ Y^{90} (65 hours) had been attained). Also in these

Card 1/2

The Yield of Sr^{90} on the Occasion of the Fission of U^{233}.   PA - 2310

samples the yield of Sr^{90} was determined.

In the course of recent experiments the number of fissions occuring in the samples was determined from the quantity of Sr^{89} (the yield of which, according to published data, was assumed to be 5,6%). Measuring results are shown together in a table. Comparison between the yields of Sr^{90} in the case of long and short irradiation shows that Sr^{90} and its predecessors have no great absorption cross sections for neutrons in the decay series for A = 90.

Among the here mentioned values for the yield of Sr^{90} the value (4,56 ± 0,08)% is the most reliable. It was obtained as the result of experiments with long irradiation of an uranium sample (1 table).

ASSOCIATION: Not given.
PRESENTED BY:
SUBMITTED: 5.9.1956.
AVAILABLE: Library of Congress.

Card 2/2

ERSHLER, B. V.

AUTHORS: Ivanov, R. N., Gorshkov, V. K., Anikina, M. P.,   89-12-11/29
Kukavadze, G. M., Ershler, B. V.

TITLE: Fission Yields of Several Heavy Fission Products of U^{233}
(Vykhody nekotorykh tyazhelykh oskolkov pri delenii U^{233})

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 12, pp. 546-547 (USSR)

ABSTRACT: The absolute fission yields were determined by means of the
isotope dilution method (1) and of the mass spectrographically
obtained integral concentrations (2). The sample of U^{233} was
irradiated for two months in a reactor.
The following yields in % were measured:

Card 1/3

Fission Yields of Several Heavy Fission Products of U^{233} 89-12-11/29

The Xe^{135} absorption coefficient was obtermined at $(3,2 \pm 1,0) . 10^6 b.$
(There are 1 table, 1 figure and 8 references, 5 of which are Slavic).

SUBMITTED: May 20, 1957

AVAILABLE: Library of Congress

Card 3/3

ERSHLER, B.V.

12291

MEASUREMENTS OF THE EFFECTIVE THERMAL NEU-
TRON CROSS-SECTION AND THE RESONANCE ABSORP-
TION INTEGRAL OF ^{232}Th. G. G. Miasishchera, M. P.
Anikina, L. L. Gol'din, and B. V. Ershler. J. Nuclear
Energy 0, 230-5(1857).

The effective thermal neutron cross section of thorium
(σ_{th} = 7.31 ± 0.10 barn) and the resonance integral for a
thorium have been measured in a heavy-water reactor by
an activation method. Gold, indium, and uranium were
used as standards. Improved values for the effective ther-
mal neutron cross section of indium (σ_{th} = 162 ± 10 barn)
and for the resonance integral of indium (RI = 2340 ± 200
barn) were determined. (auth)

PIROGOVA, N.I.; ERSHLER, B.V.

Preparation of anhydrous lithium iodide. Zhur.prikl.khim.
29 no.7:1128-1129 Jl '57.   (MIRA 10:10)
                    (Lithium iodide)

AUTHOR   **ALIKHANOV,** A.I.,YELLISEYEV, G.P.,LYUBIMOV, V.A.   **56-6-12/56**
              ERSHLER, **B.V.**

TITLE   The Polarization of Electrons on the Occasion of β-Decay.
              (Polyarizatsiya elektronov pri β-raspade- Russian)

PERIODICAL   Zhurnal Eksperim. i Teoret.Fiziki,1957,Vol 32,Nr 6,pp 1344-1349
              (U.S.S. R.)

ABSTRACT   In connection with the checking of the law of conservation of pari-
              ty,the authors carried out experiments concerning the discovery of
              a longitudinal polarization of electrons on the occasion of β-decay.
              For the determination of this polarization the effect of the azi-
              muthal asymmetry was used; it occurs on the occasion of the simple
              scattering of electrons polarized vertical to the direction of mo-
              tions through a large angle on a thin foil of a heavy element.The
              longitudinally polarized β-electrons were sent through an electric
              field crossed by a magnetic field.In these crossed fields a trans-
              versal polarization occurred in the electrons. The reasons why this
              method should be favored are given.The numerical parameters of the
              measuring device used here are given.Measurements were carried out
              in the energy domains of 300 keV.At an electric field strength of
              18,3 keV/cm and a magnetic field strength of $H" = 79$ Oe the spins
              were turned by the angle of $\varphi \sim 50°$.The expected amount of the azi-
              muthal asymmetry can he determined from the data given in a table.
              For the expected effect of azimuthal asymmetry in the plane which
Card 1/2   is vertical to the direction of spin the value $\delta_{exp} = 27,7\%$ is found.

ERSHLER, B. V.

MURIN, A. N., ERSHLER, B. V., KUKAWADZE, G. M., ANIKHINA, M. P., GORSHKOV, V. K., IVANOV, R. N., KRIZANSKIY, L. M. and REFORMATSKIY, I. A,

"Mass-Spectrometric Study of U^{233} , U^{235} and Pu^{239} Fission Products."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sep 58.

FIRSOV, V. G., ERSHLER, B. V.

"Radiation Processes in Solutions of Tetravalent Uranium" p.60

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscov,
Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscov

AUTHORS: *Ershler, BV.*
Anikina, M. P., Ivanov, R. N.,
Kukavadze, G. M., Ershler, B. V.,

89-2-22/35

TITLE: The Half-Life of Sr^{90} and Its Fission Yield from U^{233} (Period poluraspada Sr^{90} i vykhod ego pri delenii U^{233}).

PERIODICAL: Atomnaya Energiya, 1958,   Nr 2, pp. 198-193 (USSR)

ABSTRACT: According to the usual method the half-life of Sr^{90} was determined to be $29,3 \pm 1,6$ a.
The yields of Sr^{90} and Sr^{88} in the $U^{233}(n,f)$ reaction were determined to be $5,3 \pm 0,3$ % for Sr^{88} and
$5,8 \pm 0,4$ % for Sr^{90}.
The yield for Sr^{90} given in reference 7 must be calculated anew, as the half-life period of 19,9 a was still used there. When the newly determined half-life period is used, the yield in this case amounts to $6,3 \pm 0,3$ %. There are 1 table and 7 references, 4 of which are Slavic.

SUBMITTED: September 18, 1957

AVAILABLE: Library of Congress

Card 1/1

1. Half life-Measurement   2. Strontium 90-Half life-Measurement

89-4-4-2/28

AUTHORS: Firsov, V.G., Ershler, B.V.

TITLE: The Radiation Oxidation of the Solutions of Quadrivalent Uranium
(Radiatsionnoye okisleniye rastvorov chetyrekhvalentnogo urana)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 4, pp. 344-348 (USSR)

ABSTRACT: If a nitric acid solution of quadrivalent uranium is irradiated
with the γ-rays of Co^{60} in the case of the absence of O_2, the
oxidation yield of U^{+4} is nearly 5,0. The solution is a
$0,8NH_2SO_4$-solution, the U^{+4} concentration amounting to about
~100 mg equivalent/l.
The oxidation reaction of U^{+4} by H_2^+-ions was not observed, not
even if the acid content of the solution is considerably in-
creased or if the U^{+4} concentration is reduced. The yield becomes
smaller with a reduction of U^{+4} concentration, mainly as a con-
sequence of the recombination process of the radicals H and OH.
From the experimental data it was possible to derive the function-
al connection between G (oxidation yield) and U^{+4}. For the three
reactions H + OH, H + H and U^{+4} + OH also the velocity constants

Card 1/2

The Radiation Oxidation of the Solutions of   89-4-4 2/28
Quadrivalent Uranium

were determined. With an increase of U^{+4} concentrations to more
than 110 mg-equivalent/l, G was observed to decrease. This
might be explained by a reaction of U^{+4} with the radical H.
Various mechanisms are investigated, by means of which the
uranyl ions might slow down U^{+4}-oxidation.

Proceeding from this point of view the ratio of the reaction
velocities of UO_2^{+2} + H and H +.H as well as the ratios

UO_2^{+2} + OH, H + OH and H + H were computed. There are 4 figures,
3 tables, and 9 references, 1 of which is Soviet.

SUBMITTED: May 20, 1957

1. Uranium solutions--Oxidation   2. Uranium solutions--Effects
of radiation   3. Nitric acid--Chemical reactions   4. Gamma rays
--Chemical effects   5. Cobalt isotopes (Radioactive)--Performance

Card 2/2

62-58-5-18/27

AUTHORS: Ershler, B. V., Firsov, V. G.

TITLE: On the Radiochemical Oxidation of Bivalent Iron in Aqueous
Solutions (O radiatsionno-khimicheskom okislenii dvukhvalentnogo
zheleza v vodnykh rastvorakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR,Otdeleniye Khimicheskikh Nauk,
1958, Nr 5, pp. 633 - 634 (USSR)

ABSTRACT: The unexpected acceleration of the oxidation of bivalent
iron under the action of γ-radiation (in the presence of
dissolved oxygen) was described in previous reports. This
process took place with an intensified concentration of
Fe^{2+} and of the H_2SO_4, HCl, H_3PO_4-acid. The present report gives
more accurate data with respect to the dependence of the velo-
city of oxidation with bivalent iron in the presence of dissolved
oxygen on the duration of effectiveness of the solution in
contact with oxygen and the intensity of radiation. It was
found that with small doses ($\leqslant$ 15 p:sec) the effect in the
solutions remains generally small. The yield of the oxidation
of the bivalent iron dissolved in water in dependence of

Card 1/2

On the Radiochemical Oxidation of Bivalent Iron 62-58-5-18/27
in Aqueous   Solutions

various factors was further investigated. There are 1 figure
and 13 references, 6 of which are Soviet.

SUBMITTED: December 20, 1957

1. Iron--Oxidation   2. Iron--Effects of radiation   3. Gamma rays
--Applications   4. Oxygen--Applications

Card 2/2

ALIKHANOV, A.I., YELISEYEV, G.P., LYUBIMOV, V.A. and ERSHLER, B.V.

"Polarization of Electrons Emitted in β-Decay,"
Nuclear Physics, Vol. 5, No. 4, 1958. (No. Holland Publ. Co., Amsterdam)

USSR Acad. Sci., Moscow

Abst: In connection with a reconsideration of the law of conservation of parity some experiments have beeen perfomed with the purpose of detecting longitudinal polarization of electrons emitted in β-decay. It was found that the spin of the emerging β-electrons is opposite to the direction of electron motion. The magnitude of the longitudinal polarization agrees with the theoretical value, v/c, v being electron velocity.

AUTHORS: Alikhanov, A.I., Yeliseyev, G.P.,   56-34-4-1/60
               Lyubimov, V.A., Ershler, B.V.

TITLE: Electron Polarization in β-Decay (Polyarizatsiya
               elektronov pri β-raspade)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
               Vol. 34, Nr 4, pp. 785 - 799 (USSR)

ABSTRACT: The authors reported already in a short communication
               (reference 1) on experiments in which a longitudinal
               polarization of the β-electrons was found. This work
               now describes more exactly these experiments and control
               measurements. The experimental arrangement consisted of
               a device for measuring the turning of the spin and of a
               device for the measurement of the intensity of the
               electrons, which were scattered through a wide angle, at
               various azimuthal angles between 0 and 360°. The
               apparatus for the turning of the spin consisted of an
               oblong electric capacitor which was in a metal vacuum
               tube. Then the authors shortly report on the accuracy
Card 1/4   of the measurement of the electric and of the magnetic

Electron Polarization in β-Decay

56-34-4-1/60

field. The source of the β-electrons was laid upon a 10 μ thick aluminium support as an even spot with a diameter of 1 cm. The source consisted of segregations from fraction solutions (oskolochnyy rastvor) of Sr^{90} with an admixture of Sr^{89}. The spectrum of the electron energies of such a source is plotted in a diagram. The thickness of the source plays an essential role in such measurements. That part of the device in which there were the scatterer of the electrons and the counters was separated from the capacitor by a thin colloidal film. For the computation of the expected effect of the azimuthal asymmetry the angle of rotation of the electron spin in crossed fields and the dependence of the azimuthal asymmetry on the scattering angle and on the energy of the polarized electrons must be known. A quite complicated term for sin φ is obtained, where φ means the angle of rotation of the spin. The amount of sin φ depends to quite a degree on the energy of the electron and this especially in the case of high energies. 3 tables illustrate the experimental results for 3 series of measurements at energies of ~300 keV and a fourth table

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Electron Polarization in β-Decay

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gives the results for energies of ~150 ke V. Various
details are discussed. An asymmetry in the direction
0 - 180° exists that changes its sign in the case of a
change of the signs of the fields. Their mean value
is (14,5 ± 8,5)%. In the direction 90 -270° the
asymmetry is (42,8 ± 4,8)%. The data obtained on the
polarization need a correction because of the multiple
scattering at the scattering foils. The degree of
polarization has at a mean energy of 300 keV resp.
750 keV with an accuracy of 15% resp. 40% the value
-v/c. Finally the authors thank K.A. Ter-Martirosyan
for the derivation of the formula of the spin rotation
in the crossed fields; L. Ya. Suvorov, M. P. Anikina,
and V. D. Laptev for the production of the strontium
source; A. S. Kronrod for the computation of the light
intensity of the device and M. Ye. Vishnevskiy for his
useful data on the role of multiple scattering. There
are 4 figures, 7 tables, and 12 references, 6 of which
are Soviet.

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56-34-4-1/60

Electron Polarization in β-Decay

ASSOCIATION: Akademiya nauk SSSR (AS USSR)

SUBMITTED: February 3, 1958

1. Electrons--Polarization   2. Beta particles--Decay

Card 4/4

ERSHLER, VV

INOPIN, Ye V

SOV/53-65-4-7/13

AUTHOR: Varshalovich, D.

TITLE: The VIII Annual Congress of Nuclear Spectroscopy (VIII Yezhegodnoye soveshchaniye po yadernoy spektroskopii). I

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol 65, Nr 4, pp. 721 - 722 (USSR)

ABSTRACT: The 8th Congress of Nuclear Spectroscopy took place in Leningrad from January 27 to February 3, 1958. It was attended by 300 scientists from the USSR, further by scientists from China, France, Poland, Czechoslovakia, Hungary, Eastern Germany, Yugoslavia, and the Mongol Democratic Republic. 4 main lectures and about 90 reports were heard. The main lectures dealt with problems concerning nuclear models, the α- and β-decay, γ-radiation, internal conversion, and nuclear isomerism. B.S.Dzhelepov, Corresponding Member, Academy of Sciences, USSR, opened the conference. Lectures were held by V.Yu. Gonchar, Ya. Inopin, S.P.Tsytko (PTI, AS UkrSSR) on light nuclei and generalized nuclei models; L.K. Peker (LAS SSSR-library, AS USSR) Yu.M.Shirokov (MGU-Technical University), L.A.Sliv (LPI-Leningrad Physical Institute) et al. on levels in Mg, Mg and Al, D.C.
...

ERSHLER, B. V.

5.(4)
AUTHORS: Ershler, B. V., Nezhevenko, M. A.,   SOV/20-126-1-34/62
               Myasishcheva, G. G.

TITLE: The Mechanism of the Radiation Decomposition of Hydrogen Per-
               oxide (Mekhanizm radiatsionnogo raspada perekisi vodoroda)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 126 - 129
               (USSR)

ABSTRACT: The papers on the decomposition mentioned in the title (Refs
               1-9) did not compare the yield $G_{H_2O_2}$ with the data of A. O.

               Allen (Ref 10) concerning the radiolysis of water by γ-rays.
               These data may be represented by the equation (I) $(2k + 1)H_2O =$

               $= (2m + n)H_2O = nH + mOH + 1H_2O_2 + kH_2$, where k,l,m,n are

               Allen's coefficients, which give the quantity of the individu-
               al particles formed by the absorption of 100 ev radiation. The
               authors wish to prove that such a comparison may contribute
               towards clearing up the entire mechanism. They carried out the
               radiolysis in the absence of H_2 and O_2 by blowing nitrogen

               through the liquid. As further reactions, which develop with-

Card 1/3

The Mechanism of the Radiation Decomposition of   SOV/20-126-1-34/62
Hydrogen Peroxide

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii
               nauk SSSR (Institute of Theoretical and Experimental Physics
               of the Academy of Sciences, USSR)

PRESENTED: January 28, 1959, by A. I. Alikhanov, Academician

SUBMITTED: January 26, 1959

Card 3/3

S/089/60/009/01/01/011
B014/B070

AUTHORS: Ershler, B. V., Torlin, B. Z., Suvorov, L. Ya.

TITLE: On the Theory of the Stability of a Homogeneous Boiling Water Reactor/9

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 1, pp. 5-9

TEXT: First, the kinetic equations of a homogeneous boiling water reactor are developed by taking account of the volume boiling of the moderator (water). From these equations the following conclusions can be drawn: (1) For slight superheating (by some degrees), the hydromechanical mechanism of boiling can set in in a homogeneous boiling water reactor. (2) The magnitude of stationary superheating Δt_o for the hydromechanical mechanism of boiling is determined by the conditions of motion of boiling water existing in the reactor. The quantity Δt_o is characteristic of these working conditions. (3) An analysis of the kinetic equations shows that in a given range Δt_o values exist which correspond to stable working conditions in a wide range of power. If Δt_o goes beyond the

Card 1/2

On the Theory of the Stability of a
Homogeneous Boiling Water Reactor

S/089/60/009/01/01/011
B014/B070

allowed range, the reactor becomes unstable, and pulse conditions result even for small powers. The upper limit of the range of Δt_0 increases with increase of pressure. (4) Stability becomes better when the moisture content of the moderator or Δt_0 becomes smaller or the pressure becomes higher. (5) Under pulse conditions the amplitudes of all parameters become smaller when the pressure increases leaving the conditions of water flow unchanged. (6) The volume boiling can be determined by measuring superheating. The equations were analyzed by I. L. Il'ina, A. S. Kronrod, and Z. S. Ryabova. The PBM (RVM) computer constructed by N. I. Bessonov was used. A. I. Alikhanov and A. D. Galanin were interested in the work. There are 1 figure and 8 references: 3 British and 5 Soviet.

SUBMITTED: July 24, 1959

VC

Card 2/2

FIRSOV, V.G.; ERSHLER, B.V.

Radiolysis of aqueous solutions of uranium (IV) and iron (II) sulfates at elevated temperatures. Zhur.fiz.khim. 35 no.8:1887-1888 Ag '61.
(MIRA 14:8)
(Uranium sulfate)
(Iron sulfate)
(Radiation)

24061
S/020/61/138/004/022/023
B103/B203

5.4600

AUTHORS: Firsov, V. G. and Ershler, B. V.

TITLE: Usability of Allen's model in radiolysis of aqueous solutions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 884-885

TEXT: On the basis of published data, the authors attempted to prove the usability of the second approximation of the model by A. O. Allen (see below, Ref. 1) in radiolysis of titanium salts. The application of Allen's model permits two approximations: (1) the yields of H_2, H_2O_2, H, and OH do not depend on composition and concentration of the solution; (2) the irregular space distribution of primary radiolytical products is neglected. Assumption (1) was confirmed for many solutions by experiments and theoretical calculations. The correctness of assumption (2), however, has never been checked experimentally. It was theoretically discussed by B. V. Ershler and G. G. Myasishcheva [Abstracter's note: no reference given] for solutions containing H_2O_2, H_2, and O_2. B. V. Ershler (Ref. 8:

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B103/B203

Usability of Allen's model in ...

DAN, 129, 866 (1959)) has shown that the following two rules must hold in the case of validity of Allen's model and of the equations of homogeneous chemical kinetics for radiolytical processes: (1) If, for the steady state of the irradiated solution with a certain intensity I_1 of the absorbed radiation, the logarithm of the concentration of all particles in the solution was determined as a function of the logarithm of the concentration of any particle, then all these curves are shifted, on transition to the intensity I_2, along both axes in parallel to each other by the value $\log(I_2/I_1)^{1/2}$ without changing their shape. (2) If, for a radiolytical process with an intensity I_1, the yield of any particle was determined as a function of the logarithm of the concentration of another particle, then this curve is shifted, with an intensity I_2, in parallel along the axis by the value $\log (I_2/I_1)^{1/2}$ without changing its shape. The two "$I^{1/2}$ rules" (1) and (2) must hold for any reactions in an irradiated solution which corresponds to Allen's model if steady concentrations or yields therein are unique functions of the concentration of any particle.

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Usability of Allen's model in ...

Fig. 1 shows two dependence curves of the yield of radiolytical oxidation of solutions of Ti^{3+} sulfate of $\log [Ti^{3+}]$ determined with exclusion of oxygen in irradiation in a cobalt source. Curve 1 was plotted at $I_1 = 0.0364 \cdot 10^{19}$ ev/l·sec, curve 2 at $I_2 = 1.00 \cdot 10^{19}$ ev/l·sec. In fact, the two curves agree rather accurately in their shape, are parallel, and the distance between them on the $\log [Ti^{3+}]$ axis, 0.70-0.72, corresponds well to the value $\log(I_2/I_1)^{1/2} = 0.72$. From this confirmation of the $I^{1/2}$ rule, the authors conclude that Allen's model gives a good approximation for the solution of the salts of trivalent titanium. The dependence of the yield on the radiation intensity evidently proves directly that an interaction exists between the particles formed in different tracks. The proof of the $I^{1/2}$ rule shows that this interaction is well expressed by equations of homogeneous kinetics. The authors continue their study of Allen's model to detect, by the methods of the $I^{1/2}$ rule, those systems and ranges of concentration and intensities in which this method for the analysis of mechanisms of radiolytical processes can be used. There are 1 figure and 8 references: 1 Soviet-bloc and 7 non-Soviet-bloc. The three references to the English-language publications read as follows: Ref. 1: A.O.Allen,

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S/020/61/138/004/022/023
B103/B203

Usability of Allen's model in ...

J.Phys.and Coll.Chem. 52,479 (1948); Ref. 2: A.O.Allen et al. ibid.56,575 (1952); Ref. 3: A.O.Allen, Rad.Res.,1,85 (1954).

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR)

PRESENTED: January 23, 1961, by A. I. Alikhanov, Academician

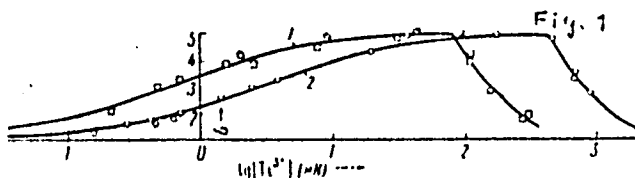SUBMITTED: January 23, 1961

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24061
S/020/61/138/004/022/023
B103/B203

Usability of Allen's model in ...

Fig. 1: Legend: Fulfillment of the $I^{1/2}$ rule in solutions of Ti^{3+} salts. Curves of the dependence G (the number of oxidized ions per 100 ev) on $\log [Ti^{3+}]$. Intensities I_1 and I_2 are mentioned in the text .

Card 5/5

ERSHLER, B.V.; FIRSCV, V.G.

The 11/2 Law on the radiolytic oxidation of iron ions by
hydrogen atoms, and the mechanism of the process. Dokl. AN SSSR
139 no.3:662-664 Jl '61.   (MIRA 14:7)

1. Predstavleno akademikom A.N. Frumkinym.
          (Iron) (Oxidation) (Radiation)

S/844/62/000/000/013/129
D290/D307

AUTHORS: Dolin, P. I. and Ershler, B. V.

TITLE: Recent results concerning the mechanisms of radiation-chemical changes in aqueous solutions

SOURCE: Trudy II'Vsesoyuznogo soveshchaniya po radiatsionnoy khi-mii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 87-101

TEXT: The authors review many recent results on the irradiation of aqueous solutions. They consider at length new evidence supporting the theory that H and OH radicals are the main agents of chemical change in aqueous solutions and discuss briefly the possibility that primary products of irradiation (e.g. H_2O^+ ions and electrons) participate directly in chemical reactions. It is concluded that physical methods must be used to study directly the primary proces-ses following irradiation but that chemical methods can be of some value if used in conjunction with suitable models or irradiation

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Recent results concerning ...

S/544/62/000/000/015/129
J290/0307

of solutions (e.g. the radical-diffusion or approximate model discussed in this review). There are 9 figures and 2 tables.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental noy fiziki
AN SSSR (Institute of Theoretical and Experimental
Physics, AS USSR); Institut elektrokhimii AN SSSR
(Institute of Electrochemistry, AS USSR)

Card 2/2

43225
S/844/62/000/000/016/129
D290/D307

//.//9ν

AUTHORS: Ershler, B. V. and Myasishcheva, G. G.

TITLE: On the mechanisms of the radiolysis of aqueous solutions of H_2, O_2, and H_2O_2

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo ANSSSR, 1962, 114-121

TEXT: The authors consider 8 possible reactions that can occur during radiolysis of aqueous solutions of H_2, O_2, and H_2O_2 and deduce equations for the kinetics of radiolysis and for the variations in the yields of H_2, O_2, and H_2O_2 with the concentrations of the initial solutions and the intensity and type of radiation. The theoretical predictions are in very good agreement with many published results. The range of validity of the approximations used in the theory is discussed. It is also shown that the existence of the

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S/076/62/036/004/004/012
B101/B110

$\int 4600$

AUTHORS: Ershler, B. V., and Myasishcheva, G. G.

TITLE: Applicability of an approximate model to radiolytic reactions of hydrogen, oxygen, and hydrogen peroxide in aqueous solution

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 4, 1962, 726-733

TEXT: On the basis of the approximate Allen model (see below), equations are derived for radiolysis processes, and their agreement with experimental data of other scientists is checked. The following reactions are considered: $H_2O_2 + H = H_2O + OH$ (1); $H_2 + OH = H_2O + H$ (2); $H_2O_2 + OH = H_2O + HO_2$ (3); $HO_2 + H = H_2O_2$ (4); $HO_2 + HO_2 = H_2O_2 + O_2$ (5); $H + O_2 = HO_2$ (6); $H_2O_2 + HO_2 = H_2O + O_2 + OH$ (7); $H + H = H_2$ (8). The dependence of the reaction rate w_i on the reaction constant k_i and the particle concentration is noted for each reaction. For the yield G_q of each particle q, $G_q = G_q^0 + \Sigma G_i$ holds. From this, the following equations

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Applicability of an approximate ...

are derived: $G_{H_2} = L + 1 - \alpha M$; $G_{O_2} = L + (1 - \alpha)M$; $G_{H_2O_2} = G_{H_2} - 2G_{O_2}$;

(II), where $\alpha = [H_2]/([H_2] + A[H_2O_2])$; $L = x + k - \alpha M - 1$;

$M = (y + Bx^{1/2})[H_2O_2]\beta^{1/2}$; $\beta = 100N/I$, (N = Avogadro's number, I = intensity of radiation). For the calculation of x, y and I, the following equations are written down: $x^{1/2} = -Q + \sqrt{Q^2 - P}$; $Q = 0.5(C[O_2] + (1 - \alpha)B[H_2O_2])\beta^{1/2}$;

$y = 0.5D^{-1/2}(\sqrt{E^2x + 4(b - x)} - Ex^{1/2})$; $P = k - \alpha m - 1 - Dy^2 - \alpha y[H_2O_2]\beta^{1/2}$;

$b = m + 1 - k$. For the constants: $A = k_3/k_2$; $B = k_1/k_8^{1/2}$; $C = k_6k_8^{1/2}$;

$D = k_5/k_7^2$; $E = k_4/k_5^{1/2} \cdot k_8^{1/2}$; $F = k_1 \cdot k_5^{1/2}/k_4$; $G = k_1/k_6$. Calculations on the basis of the equation system II for H_2O_2 solutions, saturated with H_2 at 1 atm; solutions containing only H_2O_2; solutions of O_2; solutions with comparable content of H_2 and O_2, and a solution saturated with H_2 at 1 atm, produced good agreement with the experimental data of Allen and other scientists. The applicability of the model in dependence on the assumed

Card 2/4

Applicability of an approximate ...

approximation (equal distribution and simultaneous development of the radicals) is discussed. The $I^{1/2}$ relation may be used as criterion for the even distribution of the radicals in the solution. For stationary concentration, G_{H_2}, G_{O_2} and $G_{H_2O_2}$ is equated with zero in the equation system (II) and the following equations are obtained:

$$\left[H_2O_2\right] = I\beta^{1/2}/(y + Bx^{1/2}); \quad \left[H_2\right] = \left[H_2O_2\right]A(x + k)/(b - x);$$
$$\left[O_2\right] = (1/Cx^{1/2}(Dy^2\beta^{-1/2} + y\left[H_2O_2\right]); \quad y = (1/2D^{1/2})\left[\sqrt{E^2x + 4(b - x)} - Ex^{1/2}\right]$$

(IV). In agreement with the experimental data $\left[H_2O_2\right]$ is found to approach a minimum asymptotically at $\left[O_2\right] \rightarrow 0$, and a maximum at $\left[O_2\right] \rightarrow \infty$; $\left[H_2\right] \rightarrow \infty$ at $\left[O_2\right] \rightarrow 0$. The $I^{1/2}$ relation is shown by the fact that if there is a change of the intensity from I_1 to I_2, the curves $\log\left[H_2\right]$, $\log\left[H_2O_2\right]$ versus $\log\left[O_2\right]$ are displaced along both axes by $\log(I_1/I_2)^{1/2}$. The assumption of two types of reducing particles, H and H^-, proposed by Allen, is unnecessary for the explanation of experimental data existing at

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Applicability of an approximate ...   S/076/62/036/004/004/012
                                                    B101/B110

present. There are 7 figures and 2 tables. The four most important
English-language references read as follows: A. O. Allen, J. Phys. Chem.,
52, 479, 1948; A. O. Allen, C. J. Hochanadel, J. A. Chormley, T. W.
Darvis, J. Phys. Chem., 56, 575, 1952; A. O. Allen, Radiation Res., 1, 85,
1954; A. O. Allen, J. Phys. Chem., 63, 928, 1959.

SUBMITTED: June 23, 1960

Card 4/4